Katherine Baker

kabaker@ucsd.edu || 3752 Dove Street, San Diego, CA, 92103 || 530-848-1243

Professional Summary:

Photonics PhD student experienced in optical systems design, fabrication, and testing for diverse applications with a strong history of interdisciplinary collaboration seeking a position in optical research or engineering

Education:

University of California, San Diego
PhD, Electrical Engineering, Photonics, expected September 2012
MS, Electrical Engineering, Photonics, June 2009
GPA: 3.73

University of California, Davis
BS, Optical Science & Engineering, Minor: Communications, June 2007
GPA: 3.75, *High Honors*, Department Citation (Top student of graduating class)

Skills:

Lab Skills:

- Optical system setup and alignment including interferometry
- Cleanroom experience including basic lithography and thin film deposition
- Optical materials characterization
- Fabrication experience including dicing

Software: Zemax, Solidworks, Matlab, LabVIEW

Research Experience:

UC San Diego, Graduate Student Researcher **Jan. 2008-present**

Micro-optic solar concentration
Adapted >100x solar concentrator design to low precision mechanical tracking using reactive material cladding
Defined materials requirements and performance through ray-trace simulations
Performed proof-of-concept experiments to demonstrate the plausibility of dielectrophoresis-induced localized increase in index of refraction in a colloid for use as reactive cladding

Neonatal video laryngoscope
Designed and built prototype device to specifications of collaborating pediatricians

Self-cleaning endoscope system
Built and tested piezoelectric resonant frequency driver for atomizing water droplets stuck to endoscope window

UC Davis, Undergraduate Research Assistant **June 2005-Aug. 2007**

Phase noise characterization of a mode-locked Ti:Sapphire laser
Wrote LabView code and performed optical alignment and testing

Activities:

- **Vice President of Internal Affairs,** UC San Diego Graduate Student Association **2011-present**
- **Vice President**, Secretary, Electrical and Computer Engineering Graduate Student Council **2009-2011**
- **Board Member & Event Data Coordinator,** UC Davis Alumni Assn: San Diego Chapter **2010-present**

Selected Publications/Presentations:

- **K.A. Baker,** J.H. Karp, E.J. Tremblay, J.M. Hallas, and J.E. Ford, "Reactive self-tracking solar concentrators: concept, design, and initial materials characterization," Applied Optics 51, No. 8, March 10, 2012
- **K.A. Baker,** E.J. Tremblay, J.H. Karp, J.E. Ford, N. Finer and W. Rich, "Anatomy-driven design of a prototype video laryngoscope for extremely low birth weight infants," Journal of Biomedical Optics 15, 066023, 2010
- **K. Baker,** J. Karp, J. Hallas, and J. Ford, "Reactive self-tracking solar concentration," in *Renewable Energy and the Environment*, Optical Society of America, 2011, paper SRThB2
- **K.A. Baker,** W. Rich, N. Finer, and J. E. Ford, "Design and prototype fabrication of a neonatal video laryngoscope," in *Frontiers in Optics*, Optical Society of America, 2009, paper FThP3